UNION CARBIDE

NUCLEAR DIVISION NEWS

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 5 – No. 8 April 18, 1974

QUESTION BOX

If you have questions on company policies, benefits, etc. or any other problems with which we might help, just let us know. Drop your inquiry to the Editor, Nuclear Division News. *(Or telephone it in to your plant news representative.) You may or may not sign your name. It will not be used in the paper.*

Questions are referred to the proper authorities for accurate answers. Each query is given serious consideration for publication.

Answers may be given to employees personally if they so desire.

EDITOR'S NOTE: There have recently been several questions concerning salaried employees' pay. The following question is typical.

QUESTION: AEC has been granting large salary wage increases every year. If AEC can, why can't Carbide? Why hasn't Carbide granted general increases to salaried employees instead of using the merit system? With inflation and high prices, the merit increases aren't adequate to keep an employee even.

ANSWER: Since August 14, 1971, UCC-ND has been operating under federal pay controls and the total amount of money permitted for increases has been limited. The Atomic Energy Commission and other federal organizations have been exempt from federal pay controls.

It has been our Corporate policy for many years to operate a merit program rather than a general increase one for salaried employees. We feel that differences in levels of performance should be reflected in differences in levels of pay rather than everyone getting the same amount.

Until 1973, increases granted to salaried employees more than offset increased living costs. In 1973, the Cost of Living Council controls permitted Union Carbide, or any other employer under controls, total expenditures for salary increases that turned out to be less than the increase in the cost of living index (5.5 percent allowable increase per Pay Board calculation vs. 8.8 percent increase in the cost of living index.)

It is our policy to pay salaries that are competitive with those being paid by organizations competing with us for employees.

QUESTION: Relative to traffic problems at ORGDP, most salaried workers' hours of work are from 7:45 a.m. to 4:15 p.m. However, they do not punch a time clock or change clothing, and they arrive at the plant at about the same time the hourly people do. Couldn't something be done about this?

ANSWER: The present work schedules at ORGDP have been in effect more than 6 years and the habits of many employees are built around them. For this reason a change could not be made without the need for it being very clear. At the same time it is recognized that the traffic at shift change is heavy and it would be desirable if it could be lightened.

Your question has been referred to the Plant Traffic Safety Committee recently established at ORGDP for the purpose of evaluating traffic problems there and recommending solutions.

QUESTION: The new director of the Oak Ridge National Laboratory received a large gas-guzzling automobile instead of a small, economical car. Should employees take this action to mean that UCC-ND management does not take the energy situation seriously?

ANSWER: The Nuclear Division management does take the energy situation seriously. We have already implemented a great many plans aimed at conservation and efficient use of energy, and significant amounts of energy are being saved. Considerable attention was given to the question of an appropriate automobile for assignment to the new director of the Oak Ridge National Laboratory, particularly since he had requested a smaller car. Our investigations revealed that only a change to one of the small compacts would make a significant savings in gasoline usage. Frequently Nuclear Division managers are called upon to transport distinguished visitors. While a small car would suffice on some occasions, in many situations the group is too large and a bigger car is needed. Such facts, along with the desire to have the new Laboratory Director treated no less favorably than other managers, led to the decision of assigning him an automobile of the same type provided his peers.

QUESTION: When is the Y-12 Plant going to appoint some AAP representatives that the weekly people can relate

(Continued to page 8)

Floyd Culler, ORNL, elected to 'Academy of Engineering'

Floyd L. Culler, deputy director of Oak Ridge National Laboratory, was recently elected to the National Academy of Engineering. Election to the Academy is the highest professional distinction that can be conferred on an American engineer.

Culler, a chemical engineer from Frederick, Md., was cited by the Academy for his "contributions to the development of successful nuclear power." He is credited with being principally responsible for the development of the U. S. nuclear fuel recycle program, which includes removing waste fission products from spent nuclear fuel, and making new fuel elements for nuclear power plants from the usable fuel which is recovered.

Culler is one of the nation's experts on the subject of radioactive waste handling and disposal. He has led the effort at ORNL in working out the engineering details for nuclear fuel reprocessing and recycling, as well as the handling and storing of radioactive wastes.

The National Academy of Engineering is a private organization established to share in the responsibility given the National Academy of Sciences to advise the federal government, upon request, in matters of science and engineering; to sponsor engineering programs aimed at meeting national needs; to encourage engineering research; and to recognize distinguished engineers.

Floyd L. Culler Jr.

The Academy honors those people who have made important contributions to engineering theory and practice or who have demonstrated unusual accomplishments in the pioneering of new and developing fields of technology.

Also elected to the Academy this year was William D. Manly, formerly of ORNL. Manly was cited for his "contributions in metallurgical development for reactor applications." Clarence Larson, also formerly of ORNL, was elected to membership last year.

The Academy now has 507 members. Culler's election brought the number of Tennesseans to three. The others are Aubrey Wagner, chairman of the board of TVA; and G. O. Wessenauer, retired TVA power manager.

Culler, who has spent his entire career in Oak Ridge, has received many awards. Included are: the AEC's Ernest Orlando Lawrence Memorial Award (1965); Atoms for Peace Award (1969); the AIChE's Robert E. Wilson Award (1972); and the Outstanding Achievement Award from the engineering and technical communities in Oak Ridge (1974). He is an "honorary fellow" of both the American Nuclear Society and the American Institute of Chemists.

Toll enrichment at $23 million for 1st quarter

Approximately $28.5 million in toll enrichment sales were reported at the Oak Ridge Gaseous Diffusion Plant during the first quarter of 1974. The figure compares with approximately $23 million sales recorded for the same period last year.

During the first quarter of 1974, more than 446,000 pounds of enriched uranium were shipped for use in nuclear reactors in Belgium, Japan and Switzerland, and in the states of Illinois, Maryland, Oregon and Wisconsin.

Under the Toll Enrichment Program, privately-licensed owners bring their uranium to a gaseous diffusion plant for enriching on a toll basis. Customers are charged for the services required to separate from natural uranium the desired percentage of the uranium-235 isotope, usually between two and three percent.

INSTRUMENT SHOW AT PADUCAH

The Paducah Chapter of the Instrument Society of America is sponsoring the 8th annual trade show. It will be held from noon until 9 p.m. Tuesday, April 30 at the Jaycee Civic Center.

The one-day exhibit will feature instruments from some 50 different companies.

Airplane - transportation's most inefficient fuel user

By David Pilati

Travel by air has grown at a rate far exceeding that of other transport modes. The time savings afforded by airplanes are such that other common carriers have been unable to compete for long trips. But these aircraft are inefficient users of fuel when compared with other vehicles.

On the average, it requires five times the energy (per passenger-mile) to travel by air than by bus. These average values may be misleading because energy requirements depend both on aircraft type and flight length. For example, helicopters require 15 times the energy required for a bus. Short flights are very energy intensive - a 100-mile flight requires 11 times the energy used for a similar bus trip.

Airplanes can be operated more efficiently. As shown in the table below, there exist several options which would decrease their energy use. The greatest potential for reducing airplane fuel use is to increase load factors (ratio of payload to capacity). If airplanes were filled to 60 percent of their capacity, instead of 50 percent, their energy requirements would be reduced 16 percent for the same total traffic. This is why airlines have reduced capacity by 1,500 flights per day.

Subsidized flights

There are more short flights than you might expect. Half of them are "hops" to distances under 260 miles. Besides being energy intensive, short flights are expensive and result in inconveniencing the more profitable long-haul operations. These inconveniences include unnecessary delays, ground traffic and parking congestion. This situation is aggravated by the fact that passengers on these flights do not pay all the costs. For example, 65 percent of all operations for distances under 100 miles are subsidized by the federal government, and other short flights are indirectly subsidized by an airline's profitable longer flights. Diversion of this traffic to ground modes of transportation would decrease energy requirements significantly.

The table also includes other options which would reduce airplane energy use. Not included are possible fuel reductions by decreasing delay times and circuitous routing between airports. About 25 percent of the time that an airplane engine runs on the ground is due to delay. Over 10 percent of the airplane fuel use is for inflight delay and maneuvering.

What can we do?

Many of these fuel-conserving options have been implemented by airlines and federal agencies in the past several months. The savings allow fuel to be available for other purposes. For example, a one percent reduction by the airlines could provide enough fuel oil to heat about 100,000 houses in the Tennessee area.

What can the individual do? One should ask whether an anticipated trip is necessary, or might the trip's objective be met by a telephone call. Try traveling by a ground mode the next time you take a short trip. A major difficulty is that many areas of the country do not have adequate alternatives. But, where available, their popularity is growing. For example, in 1972, rail passenger (Metroliner) growth between New York and Washington, D.C., increased by 19 percent compared with only a 3 percent increase in air traffic over that particular route.

PATENTS Granted

To Max K. Preston Jr., ORNL, for "Lift Coupling."

To Ben F. Oliver, James C. Wilson, and Grady W. Clark, ORNL, and Alan T. Chapman Jr., Atlanta, Ga., for "Method of Producing Multicomponent Metal-Metal Oxide Single Crystals."

Hair, Honeycutt and Williams promoted at Oak Ridge Gaseous Diffusion Plant

PH 74-889 PH 74-860

Three new supervisors have been named at the Oak Ridge Gaseous Diffusion Plant, one in Separations Systems, and two in Operations.

Alvin D. Hair has been named a power operations foreman. A native of Lenoir City, Hair served in the U. S. Army from 1943 until 1946, when he joined Union Carbide.

Hair lives at 605 East Meadecrest Drive, Knoxville. Mrs. Hair is the former Lucille Shaver. They have two children, Penda Denise and Victor.

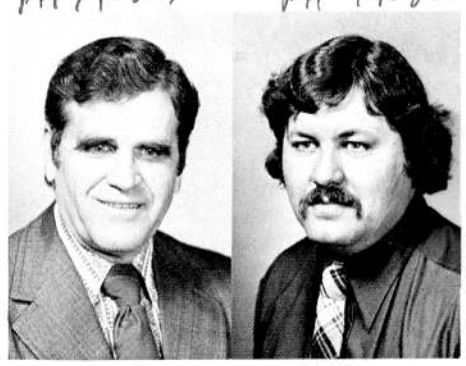
Presley W. Honeycutt was promoted to a utilities foreman. He is a native of Iuka, Miss., and came to ORGDP in 1945.

Mrs. Honeycutt is the former Louise Carson, and the couple lives at 104 Poplar Road, Oak Ridge. They have a son, Ronald, who works in Materials and Services in Y-12.

Thomas R. Williams was promoted to a laboratory supervisor in fabrication development.

Born in Newport, Williams attended public schools in Oak Ridge and Draughon's College of Drafting in Nashville. He came to ORGDP 10 years ago.

Mrs. Williams is the former Chiquita Pinegar. They live at 833 Patton Ferry Road, Kingston. They have two children, Charles and Wende.

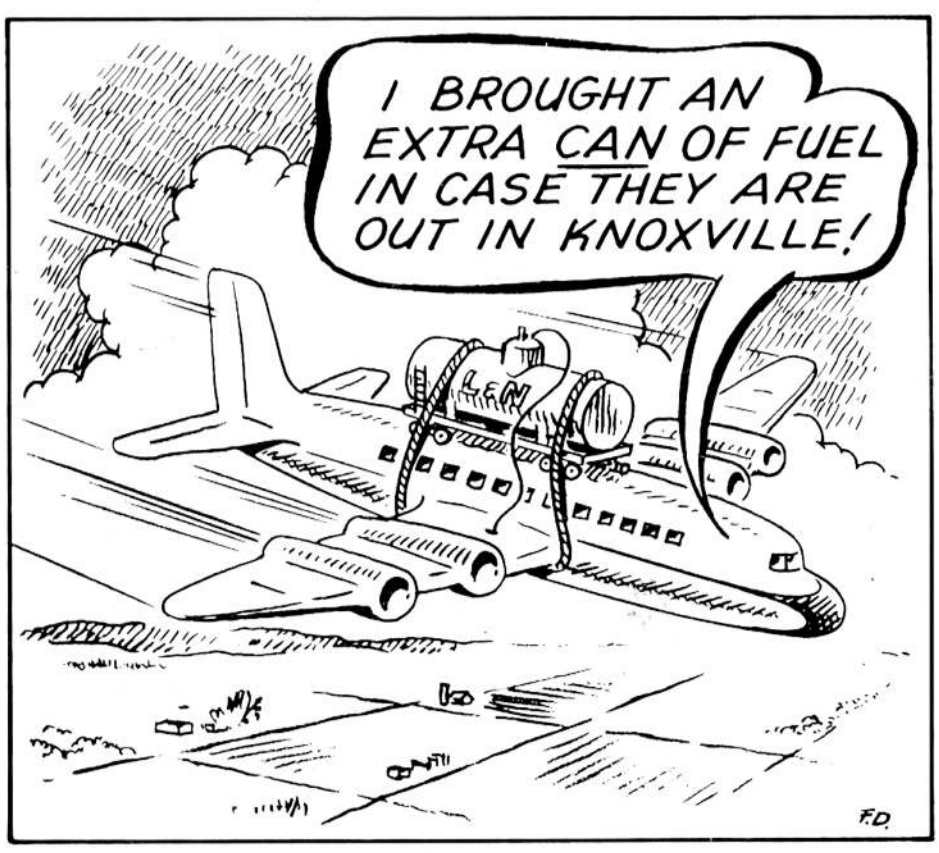


Hair Williams

PH-73 1926

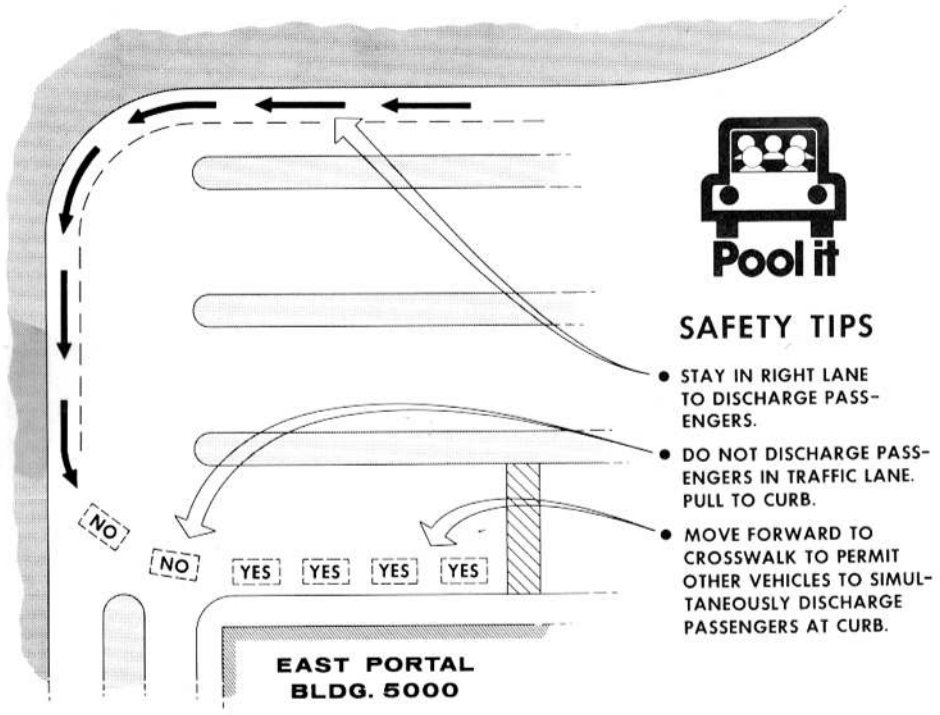
Honeycutt

Don't rob the future . . . Conserve energy now !



Potential Energy Savings (Net) for Several Energy Conservation Options

Conservation Option	Airplane fuel conserved percent	Energy saved in 1973 (trillion Btu)
Increase load factors from 50 to 60 percent	15.9	164
Shift one-half of all airplane hops under 200 miles to buses	6.1	63
Reduce cruise speeds by 2.5 percent	1.3	14
Reduce cruise speeds to minimum practical	3.0	31
Increase cruise altitudes by 2,000 feet	1.3	13
Reduce number of engines used on the ground	0.8	8
Tow airplanes on the ground	2.7	28



CAR POOLERS, KEEP RIGHT! — The diagram above was designed to inform ORNL employees of the proper procedure for discharging passengers at the East Portal, the main entrance to the Plant area. With the increased participation in car pools, it is very important that these procedures be followed to avoid traffic jams, danger to pedestrians and unnecessary delays at the Portal.

Gordon Cagle named to technical information services

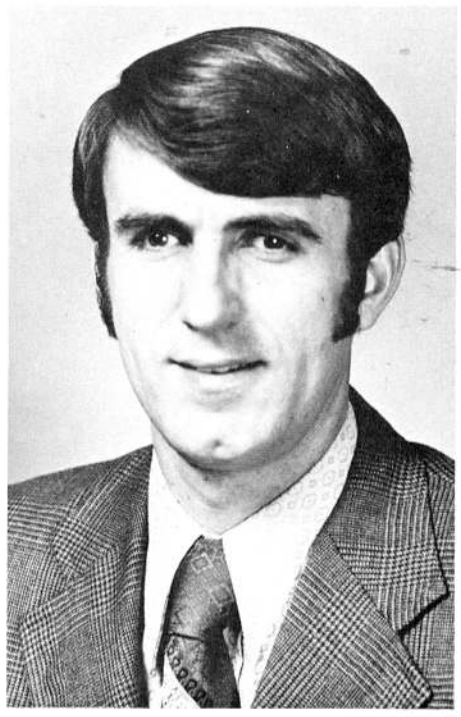
Gordon W. Cagle Jr., has been named superintendent of the technical information department.

A native of Arkadelphia, Ark., Cagle has a B.S. degree in chemistry from Ouachita Baptist College, in Arkadelphia, and a Ph.D. degree in analytical chemistry from the University of Arkansas. He joined Union Carbide in 1969 as a development chemist at the Y-12 Plant, and transferred to the Oak Ridge Gaseous Diffusion Plant last year.

He is married to the former Carolyn Berry, of Donaldson, Ark., and they live at Route 3, Clinton, with their children, Dawson and Davilyn.

Cagle enjoys fishing, gardening, and is also active in photography and auto mechanics.

In the technical information department will be Andrew Denny, Y-12 information dissemination services; Joyce B. Ferguson, ORGDP technical library; Raymond J. Fraser, Y-12 reports preparation and graphics service; and Judith D. Joyner, ORGDP technical editing services.



Gordon W. Cagle Jr.

Latham and Wilkerson get promotions in P&E

Latham

Wilkerson

Two promotions have been announced by the Plant and Equipment Division at ORNL: Otis E. Latham is a supervisory trainee, and Kenneth Wilkerson is a foreman.

Latham, a native of Sweetwater, graduated from Highpoint High School. He worked for the Yale & Towne Lock Company in Lenoir City before coming to ORNL in 1966. Latham completed training in the carpenter apprentice program, and was a carpenter in the building and utility services group prior to his new appointment.

Latham and his wife, Carolyn, live at Route 3, Sweetwater. They have four sons: Marlon, Charles, Otis and Travis.

Wilkerson grew up in Lenoir City and attended Lenoir City High School. He came to ORNL in 1965, after working for Rentenbach Engineering and the H. K. Ferguson Company. He also served six months in the U. S. Air Force. Wilkerson was a carpenter in the building and utility services group prior to his appointment as foreman.

Wilkerson lives on Gail Avenue in Lenoir City with his wife, Ruth, and three children: Sherri, Eddie and Kim.

Warning Signal

The American Cancer Society wants women to understand that a breast lump may not mean cancer but should be brought to the attention of a doctor right away. The key to cure is early detection.

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James A. Young, Editor, Y-12
Ext. 3-7100
Ruby Miller, Assoc. Editor, ORNL
Ext. 3-6421
Keith Bryant, Paducah
Bell 369
Doug Carter, ORGDP
Ext. 3-3434

—Member—
APPALACHIAN INDUSTRIAL EDITORS' ASSOCIATION
INTERNATIONAL ASSOCIATION OF BUSINESS COMMUNICATORS

Office
Post Office Box Y
Oak Ridge, Tenn. 37830

COMPANY Service 20 25 30

Y-12 PLANT

30 YEARS

Mary Davis, production assay; Hugh L. Montooth, guard department; Mildred R. Sparks, chemical services; and Francis S. McGuiness, product engineering and scheduling department.

25 YEARS

Robert J. Clouse and Iva H. Jones.

20 YEARS

Clifford Massengale, John W. Wilson, William B. Rutherford Jr., Clyde Ward, Cecil Houser, John M. Hodge, Jay A. Lane, Jimmie L. Devaney, John B. Gooch, Odis G. Carter, Oscar L. Williams, Jack Lovegrove, Bobbie Lowery, Phillip R. Hitson, James D. Draper, Donald S. Scott, Paul R. Thomas, Hilson H. Fielden, Dan D. Stroud, Luther B. Elkins, and Luther B. Seals. (Jesse L. Donahue celebrated his 20th anniversary with Union Carbide on March 12.)

GENERAL STAFF

30 YEARS

John D. Rowell, Computer Sciences Division.

25 YEARS

Mary C. Vest.

ORGDP

30 YEARS

Thomas L. McCreary, guard department; Richard M. Morris, utilities operations department administration; Charles E. Sayne, guard department; Carmon E. Houston, guard department; and Earnest L. Brown, fire department.

Herbert G. Rosander and Charles F. Lovejoy, instrument makers at ORGDP, share the same 30th anniversary date, December 6. For some unexplained reason a computer did not pick up their names last year in the company service listings. Our apologies.

20 YEARS

William E. Brown.

Next Issue

The next issue will be dated May 2.
The deadline is April 24.

An orator without judgment is a horse without a bridle.

Theophrastus

SCOUTS VISIT — Some 93 Eagle Scouts visited facilities at Oak Ridge National Laboratory. The scouts saw the Aquatic Ecology Laboratory, the Graphite Reactor and the Oak Ridge Research Reactor. They represented the Great Smoky Mountain Council of the Boy Scouts of America. The scouts used as their theme, "Energy - Your Commitment."

Division Retirees

PH74-859

Mrs. Cox Bolen

PH74-991 PH74-924

Borders Miss George

74-92

Lard

Two long-time Oak Ridge Gaseous Diffusion Plant employees retired recently.

Mrs. Imogene Cox, the first switchboard operator hired for the Manhattan District, retired to her 3100 Silverwood Road, Knoxville, home. She reported in early in 1943, and remained in Telecommunications since that time. She is a native of Rutledge.

Clyde T. Bolen, a craft foreman, in Fabrication and Maintenance Division, lives at 114 Miramar Circle, Oak Ridge. He joined Union Carbide in early 1944.

Three Oak Ridge Gaseous Diffusion Plant employees, with long service records, retired at the end of March.

Hiram A. Borders, an instrument mechanic, joined ORGDP back in early 1945. He lived at 145 Warrior Circle, Oak Ridge, but retires to a Parkers Lake, Ky., address.

Georgia Allene George, a senior lab technician in materials evaluation services, came with Union Carbide in 1944. She lives at 100 Hilltop Lane, Norris.

Berlyn J. Lard, a refrigeration mechanic in mechanical services department, hired in May 17, 1945. He lives at 246 Robertsville Road, Oak Ridge.

ORNLERS EXCHANGE VOWS — Gloria J. Anderson, Analytical Chemistry, and Rolando Long, Personnel Division at ORNL, were married recently. The ceremony was held at True Light Baptist Church, Solway, with the Rev. Dozier McKinnon officiating. A reception followed at the Holiday Inn in Oak Ridge. The couple resides at 203 West Vanderbilt Drive, Oak Ridge.

PADUCAH SCHOLAR — Jill Dee Sawyer, Lone Oak High School junior, receives her travel arrangements to Washington from Clyde C. Hopkins, Paducah Plant Superintendent. Miss Sawyer was chosen by Lone Oak teachers as a Union Carbide scholar and will attend the Congressional Seminar in the nation's capitol. Her expenses to the seminar are paid in full by Union Carbide.

F.I.C.A. (SOCIAL SECURITY) BENEFITS AND TAX CHANGES

The most recent changes in law provide for increased Social Security benefits and taxes. The 1973 tax rate and the new rate for 1974 are as follows:

YEAR	TAX RATE	MAXIMUM EARNINGS ON WHICH F. I. C. A. TAXES WILL BE PAID	MAXIMUM TAX
1973	5.85%	$10,800	$631.80
1974	5.85%	$13,200	$772.20

Since this tax is applied equally to employers and employees, the Company will also pay a higher amount.

The increase in taxes was effective January 1, 1974, while the increase in benefits, estimated at 11%, will go into effect in two stages, the first being a 7% increase due in March.

AFTER SURGERY

The days after surgery can be difficult for the cancer patient but the American Cancer Society has volunteers able to make a hospital visit who can say, "I've had the same thing myself but I'm back enjoying life. You can, too." Check with the ACS for more information.

Over 40?

When you round that 40 mark, it's a good idea to ask your physician for a "procto" when you have your annual physical. This examination can help find colon and rectum cancer in an early stage, when it's most curable. This advice from the American Cancer Society.

PH 74-912

SPECIAL SAFETY RECOGNITION — The janitors' department, at the Oak Ridge Gaseous Diffusion Plant was cited recently for establishing a nine-year record without a disabling injury. The 65-member department drew special praise from Larry A. Studinger, superintendent of the Fabrication and Maintenance Division, for their diligence through the years. From left are James H. Harris, Chester R. Stevens, Kenneth E. Roberson, Jack W. Arnwine, James D. Herrin, Clarence L. Arnwine, Nathan B. Campbell Jr., John R. McClendon, Charles L. Harbison, Charlotte H. Goley, Studinger, Brenda L. Williams, Coye C. Blankenship, Josephine H. Walker, Dwight Braden and Willie M. Loveday.

Y-12 PLANT

RIDE or will form car pool from Massengale Bridge area, Norris, to Central Portal, straight day. Clyde Cook, home phone Norris 494-9532.

ORGDP

CAR POOL members from East Village, Oak Ridge, to Portal Two, straight day. Willard Norton, home phone Oak Ridge 483-0823.

RIDER or car pool member from Fountain City or Inskip area, to Portal Two or Four, straight day. Bob Salmon, plant phone 3-3750, or home phone Knoxville 687-5818.

ORNL

RIDE or JOIN CAR POOL from East Village (vicinity of Arrowwood or Delaware Roads), Oak Ridge, to either portal, 8 a.m. shift. W. N. Baird, home phone 483-3969, plant phone 3-6854.

There is nobody so irritating as somebody with less intelligence and more sense than we have.

RECENT WINNERS — The Paducah Plant has named the poster winners for the first month of the year in its safety sign competition. The winners received a $25 savings bond. John L. Clark, assistant plant superintendent, congratulates Sylvia Mortimore, above, as other winners receive bonds. From left are, Waldo Evans, contest chairman; Joseph F. Foster and Clarence F. Robertson, winners; Clark and Mrs. Mortimore, Eldon J. James and William O. Boren.

Finance and materials at ORNL names Mrs. Massengill foreman

Joline J. Massengill has been promoted to materials foreman in the Finance and Materials Division at ORNL. According to William O. Graves, superintendent of the materials department and other employment officials, Mrs. Massengill is the first woman to become a foreman at ORNL. (The title "foreman" indicates supervision of hourly employees under union contract.)

Mrs. Massengill, formerly Joline Perkins, is a native of Campbell County. She graduated from Jacksboro High School and attended Nashville Business College. Prior to coming to ORNL in 1955, she was employed as secretary to the plant manager of La Follette Shirt Company.

Since she joined the ORNL staff, Mrs. Massengill has taken part in many of the activities of her Division. She recently participated in the pilot program for the human relations course now being offered through the personal development department.

Mrs. Massengill and her husband, Lee, live in Caryville. They have a daughter, Renee.

Joline J. Massengill

Calendar of EVENTS

TECHNICAL

April 23

University of Tennessee Department of Chemistry General Seminar: "Unusual Chemiluminescence Reactions of Alkyl Halides with Aromatic Radical Anions," Professor Harry B. Mark Jr., University of Cincinnati. 414 Buehler Hall, UT Campus, 4 p.m.

April 24

Chemical Technology Division Seminar: "Fuel Reprocessing in the HTGR Fuel Cycle - An Overview," J. W. Snider. Central Auditorium, Building 4500N, 3 p.m.

April 30

Biomedical Graduate School Seminar: "Better Living Through Chemistry - Insect Style," Thomas Eisner, Cornell University. Large Conference Room, Building 9207, 3 p.m.

COMMUNITY

April 19

Oak Ridge Playhouse presents: "You Know I Can't Hear You When The Water's Running." Playhouse, 8:20 p.m. Admission: adults $2.50; students $1.25 (Fridays only). Other performances April 20, 26, 27 and May 3 and 4.

April 20

Oak Ridge Civic Music Association presents: "The Creation" by Haydn. Joint concert Oak Ridge Symphony and Chorus. High School Auditorium, 8:15 p.m. Admission: adults $3; students $1.50.

April 21

Art Center Film Club presents: "The Adversary," India, and a short "The Chairy Tale." Jefferson Junior High School, 8 p.m. Admission: adults $1.50; students $1.

April 27

Oak Ridge Civic Ballet Association presents: Bristol Ballet Theatre "A Balletic Tribute to Pablo Casals," Oak Ridge High School Auditorium, 8:15 p.m. Also April 28 at 3:15 p.m. Admission: adults $3; students $1.50; children under 12 $1.

Dry cleaning fluid, water used to detect neutrino

There's more than gold in them thar Black Hills. Scientists working for the Atomic Energy Commission are "prospecting" for a subatomic particle called a "neutrino" in a gold mine in Lead, S.D.

Hunting for what Italian physicist Enrico Fermi named "the little neutral one" can be a prospector's nightmare. This particle, produced from nuclear reactions in a star's core, is difficult to detect because it is weightless, has no electrical charge and travels at the speed of light.

After being created in the interior of a star such as the sun, the neutrino passes out into space and can travel great distances through matter without being stopped, altered or deflected from its path. It can simply pass right through the 7,920-mile diameter of the earth.

Emission from sun

Scientists working on two projects funded by the AEC at the Homestake Mining Company's mine in Lead have developed methods to record neutrino emission from the sun and other more distant stars. Their studies yield information on the interior structure of the sun and on the core energy of stars.

To study neutrinos emitted by the sun, the AEC's Brookhaven National Laboratory developed a method using a large (100,000 gallon) tank of perchlorethylene, a dry cleaning fluid. This chemical has a high chlorine content.

As neutrinos pass through this fluid, once in a great while a neutrino particle will collide with an atom of chlorine-37 (approximately one-fourth of the naturally occurring chlorine is chlorine-37) which then changes into an atom of radioactive argon-37. The argon-37 is extracted from the tank and measured by a radiation counter. Still, only about one elusive neutrino per week is captured in this tank and subsequently detected.

To shield out the other cosmic rays that can produce the same argon-37, the tank was built 4,850 feet below the surface at the Homestake mine.

Using a tank of water located at the same mine shaft, physicists from the University of Pennsylvania, the University of Texas and the University of Turin, Italy, are recording the emission of neutrinos from distant stars.

Two large tanks of water, which serve as Cerenkov radiation detectors, are used for this study, one in the Homestake mine and another in the Mont Blanc Tunnel linking Italy and France. These two counters measure the "wake" of bluish Cerenkov light that neutrinos leave behind as they pass through deionized water faster than light itself can.

The detectors record neutrinos that come from exploding stars in our galaxy. When a star dies, gravitational collapse shrinks it from a sphere of a million miles in diameter to one only a few miles across. At this collapse, heat, a flare of light and a tremendous burst of energy in the form of a neutrino flash occur.

Distance may be calculated

Detection of a neutrino flash by both water tanks confirms the star's collapse. If the twin water tank systems prove successful, additional detectors will be added so that, by triangulation, the collapsing star's distance from the earth can be calculated.

The scientists using the Cerenkov counters also hope to verify current astrophysical theories on pulsars, black holes and gravitational waves.

RETIRED ORNL FOREMAN

Ernest W. Hobson, who retired from ORNL in 1971, died April 5 at the Oak Ridge Hospital. Mr. Hobson was a maintenance foreman in the Plant and Equipment Division prior to his retirement.

Survivors include his wife, Mrs. Jeanette Hobson; son, David O. Hobson, a metallurgical engineer at ORNL; a brother; four nieces and two grandchildren. The Hobson home is at 390 West Outer Drive, Oak Ridge.

Division Deaths

Herschel K. Bailey Jr., Y-12's research services, died at his home March 28.

A native of Opelika, Ala., Mr. Bailey attended Auburn University and joined the Y-12 Plant in 1944. The Bailey home is at 109 Goucher Circle, Oak Ridge.

Mr. Bailey

Mr. Bailey is survived by his wife, Mrs. Jessie Wallace Bailey; two sons, Larry and Herschel K. III, two grandchildren and three sisters.

Funeral services were held at Martin's Funeral Home with the Rev. David Young officiating. Burial was in the Oak Ridge Memorial Park.

Hans G. Bingham Jr., a research associate in the Physics Division at ORNL, died April 8 in a car accident.

Mr. Bingham, who was originally from Chattanooga, received the Ph.D. degree from Florida State University. He had done post-doctoral work at the University of Pennsylvania, and was on a three-year post-doctoral appointment at ORNL at the time of his death.

Mr. Bingham

He was married to the former Carol Weaver, who is head nurse at Oak Ridge Associated Universities' Medical Division Hospital. The Bingham home is at 106 Carlisle Lane, Oak Ridge.

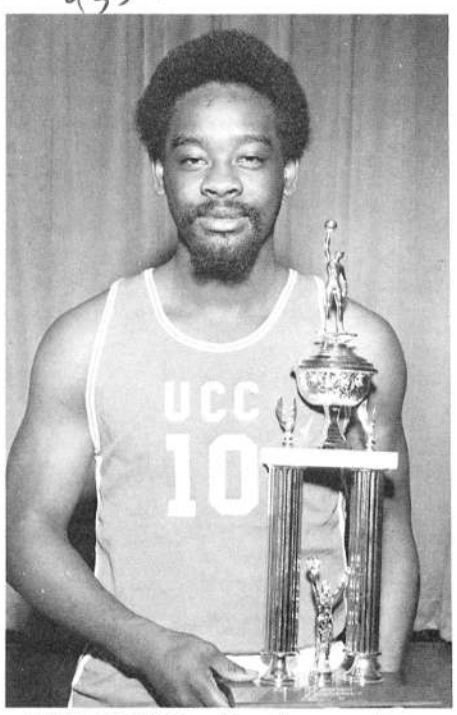
Survivors, besides his wife, include his parents, Mr. and Mrs. Hans Bingham Sr.; brother, Michael Bingham; and grandmother, Mrs. John Burns, all of Chattanooga.

Funeral services were held April 11 in the chapel of the Chattanooga Funeral Home. Interment followed in White Oak Memorial Park Cemetery.

4548-1,2,3,4,5

RECREATIONOTES

4554-2



BEST SPORT — For the second time in two years a Union Carbide employee at Paducah wins the sportsman of the year award from the Paducah Parks and Recreation Basketball League officials. Gerald Box, in Fabrication and Maintenance, took this year's award. He is the son of David Box, a recent retiree from the Paducah Plant. Jim Petty won the award last year.

CALLING SOFTBALLERS

Friday, April 26 is the deadline for entering the Softball League for play in the Oak Ridge area. All games will be played at the Clark Center Recreation Park. Entries should be mailed to the Recreation Department, Building 9811-5, Y-12. Additional information may be obtained by calling extension 3-5833.

ORNL BOWLING

The Ten Pins hold a scant lead over the ORAU team in the A League, as action nears the season's end.

The Knuckleheads finished in first place, only one-half of a point ahead of the Pin Heads in the C League, as action slowed recently because of faulty equipment, which delayed the final night of competition.

The ORNL Ladies' League sees the Pick-Ups only an edge away from the Mousechasers. The league leaders saw their Sally Stockstill roll a 202 game, a 606 series recently.

The Oops team score a one-point lead ahead of the Untouchables in the Carbide Family League. Paul Bennet and Mary Hawkins were the heroes recently in mixed bowling.

HIGH POWER RIFLE LEAGUE

Jack Spurling, Y-12, won the first match of the All Carbide High Power Rifle League with a 483 out of a possible 500. Bill Galyon, also from Y-12, won second place with 472, and ORNL's Jack Mrochek came in third with 470.

Jack Huff, Y-12, and Don Kiplinger tied with 462 each.

ALL CARBIDE BOWLING

The summer league for the Carbide Family Mixed Bowling competition will get underway in May. An organizational date of May 2 has been selected, with the meeting at Ark Lanes, at 7:30 p.m. Those interested may contact Benny Wood, 3-7531, Edith Duckworth, 3-5341, or the Recreation Office, 3-5833.

Young folks tell what they do, old folks what they have done, and fools what they intend to do.

French

4554-1

WINNERS, ALMOST! — Union Carbide's BLUES came close to being the champions of the Paducah Parks and Recreation Adult Basketball League, losing out in the last night of league play. Kneeling, from left, are Mike Flood, manager; Justin Henderson, Ron Yates and Elston Petty. Standing are Gerald Box, Jim Jones, Stanley Jones, Steve Sevenski and Jim Petty, co-manager. Not pictured are Dennis Gray, Charles Welch, Jeff Davis and Jim Burr.

ST. PAT IT IS, BEGOOOORAH! — Paducah folks enjoyed a St. Patrick's Day dance back in March, staged at the St. Mary's Commons. The "wearing of the green" party has become a tradition in the Paducah Plant.

ORGDP BOWLING

Elaine Griffies paced bowlers in the ORGDP Women's League, recently posting scores of 539 scratch, 614 handicap. The Uptowners keep a slight margin over the Payoffs. Sue Davis also hit a high spot, rolling a 212 scratch game!

The Tuesday League puts the City Slickers barely in front of the Double X squad. B. D. Simcox led bowlers with a 216 game, boosted to a 243 single with handicap. C. L. Butcher's 614, 662 handicap paced bowlers the same night.

In the Wednesday League, it's the Sandbaggers, by a comfortable five points. Gordon Linder's 259 game, and C. F. Hale's 682 series were newsmakers recently.

SUMMER GOLF LEAGUES

Golf Leagues are being formed for play at four Oak Ridge area courses for the summer. They are Dead Horse Lake, Southwest Point, South Hills and Melton Hill. Entries should got to the Recreation Department, Building 9711-5, Y-12, or by calling extension 3-5833.

Secretaries day set April 24 in Ridge

The Oak Ridge Chapter of the National Secretaries Association will celebrate Secretaries' Day on Wednesday, April 24, at a salad bar luncheon, compliments of the Holiday Inn. Members of the chapter, as well as other area secretaries, are invited to attend, and may bring their bosses. Reservations for the luncheon should be made by April 22, through Bettye Pope, extension 3-7754; Bertie Byrum, 3-1909 or 3-6283; Martha Lyle, 3-4363; Sheila Glenn, 3-9373; or Janice Winslett, 482-4411.

Y-12 BOWLING

The Alley Cats beat out the Hits & Misses for the top spot in the Y-12 Mixed League's second half, by a good one and one-half points. They face the Splinters in the league's roll off.

The Has Beens keep a slight marginal lead in the Classic race, only a breath ahead of the Rebels. The Splinters' Harry Keen led the pack recently, rolling a 253 game.

The C League still rests in the hands of the Rollmasters, ahead of the Rounders by two. Walt Goodwin's 657 scratch series is still high for the season.

FISHING RODEO

E, F, G, H, & J Shiftmen staged a big fishing rodeo at Bayside Dock, March 30. The following winners took home a spinning rod and reel, a tackle box, and a minnow bucket, in that order:

SMALLMOUTH BASS

Dayton W. Burchfield
William L. Scruggs
Carl F. Butler

LARGEMOUTH BASS

Hugh C. Nichols
Roscoe C. Murphy
Larry Walker

CRAPPIE

Everett S. Smith
Jimmy R. Milligan
Steven W. Combs

ROUGH FISH

William C. Hembree.

Nicotine addiction

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning their health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, or call the news editor in your plant, and give him your question on the telephone.)

By T. A. Lincoln, M.D.

Three out of four middle-aged adult smokers try to stop smoking but only about one in four succeeds, and often only temporarily. During adolescence and young adulthood, smoking has important image-building rewards, but in middle age it becomes an expensive habit with many disagreeable side effects. The most important reason why people can't quit appears to be due to an addiction to nicotine. The withdrawal symptoms, after smoking is stopped, are often extremely unpleasant.

About 50 - 150 micrograms of nicotine are absorbed per inhaled puff, or about 1-2 micrograms per cigarette. Nicotine is absorbed from the lungs almost as fast as if it were injected intravenously. It is also absorbed through the mucous membrane of the nose and mouth so cigar and pipe smokers as well as chewers have exposure. The reason why nicotine tablets are not particularly effective in helping a person give up smoking is the slow absorption of the drug from the gut.

Monkeys get "hooked"

Although it requires an elaborate experimental set-up so no pain is involved, monkeys made dependent on nicotine will self-administer it intravenously. Once they have been "hooked" by IV priming over one to two weeks, they eagerly press a lever to get their own dose through an indwelling intravenous canula. When the amount they get each time is increased too rapidly, they decrease the frequency that they press the lever. Each monkey seems to build up to a level which he finds satisfying and then will abruptly refuse to self-administer the next higher dose.

In one study, human smokers markedly decreased their frequency of smoking if they were given nicotine by injection. When they were hooked up to a continuous IV drip of saline, they would smoke as much as usual but when, unbeknownst to them, nicotine was added to the saline, they reduced the number of cigarettes they smoked.

Effects differ

In cat experiments, nicotine can cause either an increase or decrease in the amount of acetylcholine released from the cortex of the brain. It causes changes in the electroencephalogram (the brain wave test) consistent with either an increase or decrease in electrical activity of the cortex. Human smokers typically describe either a stimulative or a relaxing effect from a cigarette. The effect is apparently related to the amount and duration of the dose which reaches the brain, as well as the level of its pre-conditioning. When the brain is in an excited state, nicotine causes a depressant effect and when quiet, it causes stimulation. The relationship of dose, dose rate and conditioning are still only partially understood.

The nicotine content of a puff of smoke depends on how a cigarette is smoked. When a smoker takes large puffs or frequent small puffs, his nicotine absorption will be rapid and high. When he puffs slowly and shallowly, his nicotine buildup is slower and lower. When one considers that smokers can easily vary their puff volume, duration and frequency, it is easy to see how they can meticulously regulate the effect. If you don't believe this, observe the difference in smoking behavior between the first cigarette smoked after several hours of abstinence and a second one smoked a few minutes later. The first one is usually inhaled deeply and rapidly, while the second one is inhaled in a slower, calmer manner.

High vs. low nicotine

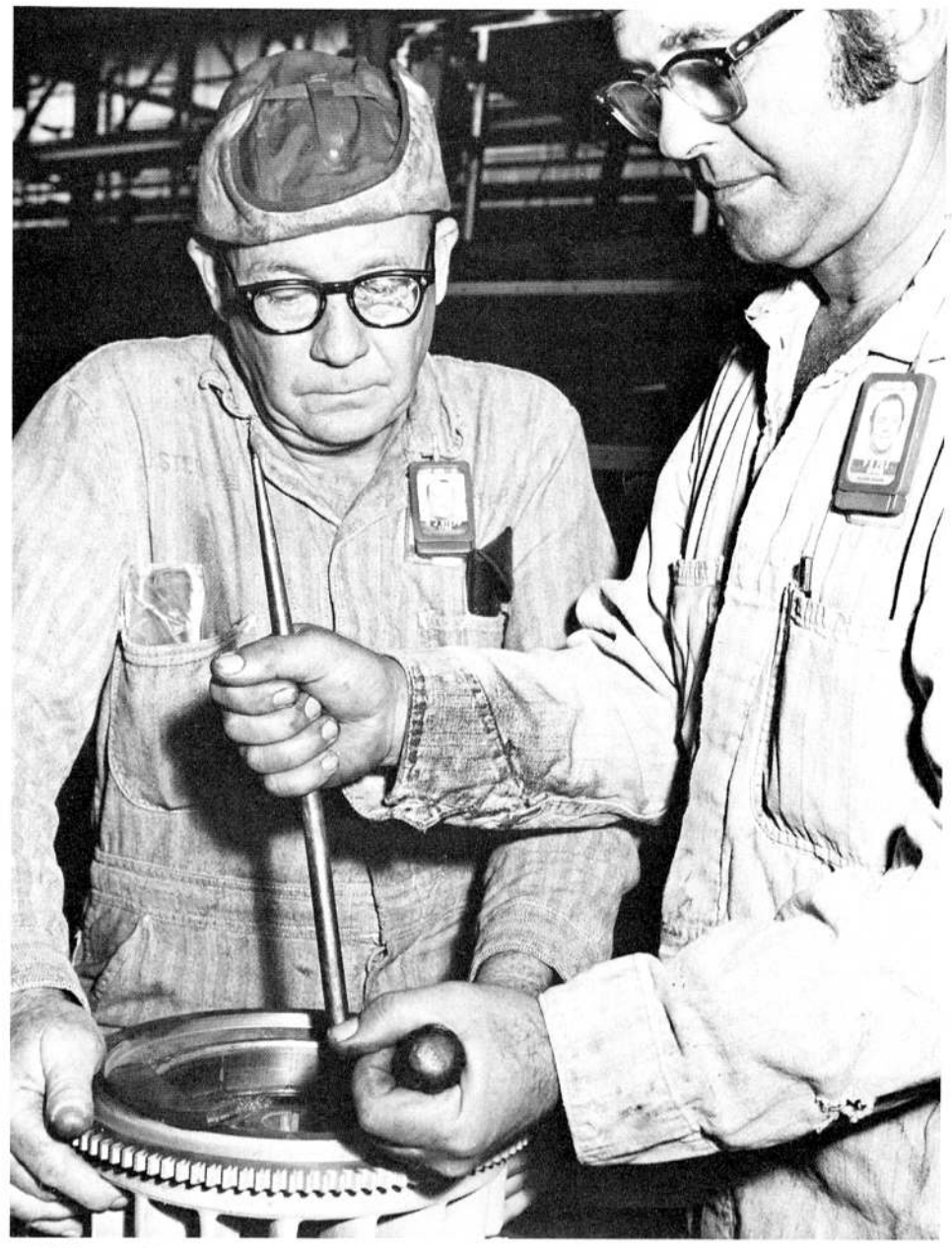
There has been a brisk argument recently in the British **Lancet** regarding the wisdom of low nicotine cigarettes. It has been clearly shown that the puffing rate is faster and deeper when people smoke them. They smoke more cigarettes and each one faster to reach and maintain the same nicotine level. When they do, they increase their exposure to the cancer-producing and irritating tars and chemicals and carbon monoxide. Some experts therefore believe a high nicotine cigarette would be safer since it would reduce the total exposure to smoke.

Unfortunately, nicotine, by itself, has a pronounced effect on the circulation, apparently due to the release of catecholamine hormones. In a healthy person, nicotine causes a mild increase in coronary blood flow, but there is also an associated increase in oxygen demand by the heart muscle. Smokers with coronary artery disease sometimes cannot meet these demands and, therefore, experience an increased risk of a heart attack and the likelihood of sudden death.

Any modification of the cigarette to make it safer will probably require reducing all the hazardous ingredients. To do so may so emasculate the cigarette effect that few people will buy them. Unfortunately, lettuce cigarettes are not satisfying unless they are laced with added nicotine. Someone needs to develop an innocuous tobacco hybrid which can be laced with an equally innocuous nicotine substitute which still gives the smoker his pleasure. There is a real challenge for some bright young scientist!

Dentists On The Alert

You may not know it, but your dentist is on the lookout for oral cancer along with his search for cavities. If you notice anything unusual in the condition of your mouth check with a dentist or doctor right away, cautions the American Cancer Society.



EYE-SAVER — Bruce J. Stepp, left, wears the safety glasses that probably saved his eyesight, as co-worker Paul O. Fox demonstrates how the magnetic section of the fly wheel was being pried from the apparatus. Both Stepp and Fox are employed in the Oak Ridge Gaseous Diffusion Plant's garage.

PATENTS *Granted*

To Edward S. Bomar, Thomas G. Godfrey and Victor J. Tennery, ORNL, for "Sintering of Compacts of UN, (U,Pu)N, and PuN."

To Manfred K. Kopp and Casimer J. Borkowski, ORNL, for "Proportional Counter Radiation Camera."

To Fletcher L. Moore, ORNL, for "Extraction of Mercury from Alkaline Brines."

To Makwon Cho, ORNL, for "Tissue Collector."

To Wesley E. Smith and Ottis J. Horne Jr., Y-12, for "Method for Increasing the Carbon Yield of Indene-Derived Carbon Procurers."

To James C. Mailen, ORNL, for "Rotor for Fast Analyzer of Rotary Cuvette Type."

To Milton H. Lloyd, ORNL, for "Solvent Extraction Process for Producing Low-Nitrate and Large-Crystal-Size PuO Sols."

To Forest G. Seeley and Willis H. Baldwin, ORNL, for "Extraction of Lithium from Neutral Brines Using a Beta Diketone and Trioctylphosphine Oxide."

To David H. Sturgus, Zane L. Ardary and Carl D. Reynolds, Y-12 Plant, for "Improved High-Temperature Thermal Insulation."

To Clark M. Lay, Thomas W. Davidson and James H. Burkhardt Jr., Y-12 Plant, for "Continuous Dynamic Error Monitoring Device for Numerically Controlled Machines."

Safety glasses save eyes

The result of an accident which recently occurred at the Oak Ridge Gaseous Diffusion Plant vividly illustrates the importance of wearing appropriate eye protection on jobs and in areas where it is required.

Bruce J. Stepp, a garage mechanic, and a co-worker, Paul O. Fox, were removing a magnetic section from a fly wheel using a pry bar. As they were pressing down on the bar, a piece of metal flew up with considerable force and struck the lens of Stepp's safety glasses. The lens was shattered, but the safety glasses prevented the possible loss of his left eye.

This incident should serve as a reminder that any one is subject to eye injuries.

It is hoped that all Nuclear Division personnel will comply with the basic eye protection policy, which states:

"Eye protection equipment must be used while engaging in any activity through which eye injury may be encountered regardless of location, or while within any portion of a designated eye protection area regardless of activity."

Wise men talk because they have something to say; fools, because they wish to say something.

Nothing looks so like a man of sense as a fool that holds his tongue.

He who knows nothing, knows enough if he knows when to be silent.

Moss and Porter named Y-12 safety engineers

Two safety engineers have been named in the Y-12 Plant, according to an announcement from Clarence E. Johnson, head of the safety department. They are Homer G. Moss and Patrick A. Porter.

Moss joined Union Carbide in 1969, after working with Fisher Scientific Company, and the Memorial Hospital in Forest, Miss. He is a graduate of Southern Academy of Clinical Technology and David Lipscomb College. He is presently finishing requirements for a degree in industrial engineering from The University of Tennessee.

Moss and his wife, Dale, live at 210 Virginia Road, Oak Ridge, with their two daughters.

Porter, a native of Maryville, is a graduate of Tennessee A&I State University. He is also a graduate of the Training and Technology project at Y-12, and is a former physical testing instructor there.

Porter lives on Topside Road, Louisville, and enjoys fishing and hunting in his spare time.

Moss Porter

John P. Murray dies in Oak Ridge April 11

John P. Murray, a 41-year Union Carbide Corporation official, died at Oak Ridge Hospital April 11.

He began his long Carbide career at the South Charleston (W. Va.) plant in 1931. In 1944, he transferred to the Oak Ridge Gaseous Diffusion Plant as a major area supervisor and later became a general plant foreman. Subsequently, he was named superintendent of the Process Division at ORGDP, and in June, 1951, was named superintendent of the Paducah Gaseous Diffusion Plant. In January, 1954, he became superintendent of the Y-12 Plant, and in 1961 was named general manager of production for the Nuclear Division. In 1964 he joined the Satellite Division of Union Carbide at Kokomo, Ind., and returned to the Oak Ridge area in 1972.

Among his survivors are his wife, Mrs. Lucille K. Murray, Oak Ridge; two daughters, Mrs. Robert Brandt and Mrs. Philip Russ, both of Nashville; and a son, Dr. John P. Murray Jr., St. Louis, Mo.

A scripture-reading wake was held at St. Mary's Church, with the Rev. James M. Bailey officiating. Interment followed in the Oak Ridge Memorial Park. A funeral liturgy mass was held April 15 at St. Mary's.

Mr. Murray's devotion to the tasks before him and his allegiance to fellow workers are the hall mark of a long and illustrious career. Fellow employees join his myriad of friends in expressing their sympathy to his family.

Think safety belts are confining?

Not half as confining as wheelchairs.

What's your excuse?

SAFE WORKER AWARD — Harry E. Seagren, superintendent of ORNL's Plant and Equipment Division, recently presented employees of the Electrical and Air-Conditioning Department with plaques signifying their completion of calendar year 1973 without a serious injury. The committee above represents about 75 employees in the department. The department is divided into two groups. Roy Hartman's group is shown to the left of Seagren, and Ross Grubbs' group is shown to the right.

QUESTION BOX ??

(Continued from page 1)

to? Most weekly employees with problems concerning equal opportunity in their work certainly couldn't go to a monthly representative and expect him (or her) to understand and be sympathetic to their problem. This situation holds true particularly for employees in the Divisions whose AAP representatives are in the , , Department. If I had a problem the last person I would want to go to would be someone in that department. (K-25 has appointed some weekly AAP reps!).

In addition to this, I would like to say that the answers to most of the questions I've seen in this paper lately which concern weekly employees, have had answers which I consider very inadequate and in some cases out and out untruths.

ANSWER: First, concerning the feeling toward answers to previous questions — send the NEWS your comments on particular answers that have bothered you and tell us why. We want to give adequate, and by all means honest, answers in the limited space we have.

Your question about AA representatives is similar to another one which was answered in the January 5 issue of the NEWS and most of that answer applies. If you don't still have your copy of that issue get one from your facility's NEWS editor. That answer pointed out that while an AA representative needs to have the confidence of the employees in his division, his principal job is to assist the Division Superintendent in meeting AA goals rather than serving as an ombudsman. It listed the payroll, sex, and race of the then current affirmative action representatives, showing that there were a good many weekly employees and blacks serving in that capacity.

QUESTION: There have been, in the past, company-sponsored programs or seminars on drugs, off-the-job safety, use of telephones, United Fund and Savings Bonds. There is a need to expand this trend to include other subjects of broad interest - subjects like income tax filing seminars, real estate transactions, mortgages and loans, personal improvement topics, etc.

More and more companies are answering this need by taking an interest in assisting the employee toward more efficient use of his wages and time to combat spiraling cost increases. Shouldn't our company be doing more along these lines?

ANSWER: To the extent that meetings have been held in connection with United Fund and/or Savings Bond drives, they have been associated with those campaigns and have not been training programs or seminars. Training programs offered in the Nuclear Division, with few exceptions, have been related in some way to the business activities of the installations involved. Even such subjects as drug abuse, alcoholism, and off-the-job safety are directed toward improving the attendance and effectiveness of the work force.

Courses in taxes, real estate, personal finance and budgeting tend to meet employees' personal needs rather than business needs of our organization. Such specialized courses should, in our judgment, be obtained from outside sources. Your industrial relations or personnel department will be pleased to offer assistance and guidance to employees concerning outside courses available.

MANY QUESTIONS

If you have submitted a question to this column, have patience. An answer is coming. The News staff apologies if there has been a delay in your answer.

UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX Y, OAK RIDGE, TENNESSEE 37830

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